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 Reply to Office Action of February 8, 2005

### REMARKS

Claims 1-23 are pending in the application. These claims were rejected or objected to as follows:

Claims / Section	35 U.S.C. Sec.	References / Notes
18 & 19	Objection	<ul style="list-style-type: none"> <li>• Typographical errors.</li> </ul>
6-8 & 14	§112, Second Paragraph Indefiniteness	<ul style="list-style-type: none"> <li>• Ambiguity with respect to compound phrases.</li> </ul>
1-3, 5-7, 9-11, 15-17, 20 & 21	§102(e) Anticipation	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434).</li> </ul>
22 & 23	§103(a) Obviousness	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434).</li> </ul>
4	§103(a) Obviousness	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434); and</li> <li>• Minark (U.S. Patent No. 6,018,644).</li> </ul>
12-14	§103(a) Obviousness	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434); and</li> <li>• Burgess (U.S. Patent No. 6,459,885).</li> </ul>
18	§103(a) Obviousness	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434); and</li> <li>• Waldroup, et al. (U.S. Patent No. 6,070,058).</li> </ul>
19	§103(a) Obviousness	<ul style="list-style-type: none"> <li>• Hagstrom, et al. (U.S. Patent No. 6,185,434); and</li> <li>• Kurchuk, et al. (U.S. Patent No. 6,272,327).</li> </ul>

5 Applicant has amended claims 1, 7, 8 and 14, and has added claims 24-29. Applicant has also provided discussion for distinguishing the present invention, with claims as amended, from the art cited against it.

*Applicant's use of reference characters below is for illustrative purposes only and is not intended to be limiting in nature unless explicitly indicated.*

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**OBJECTION TO CLAIMS 18 & 19**

*1. Applicant has amended claims 18 and 19 in accordance with the Examiner's suggestions.*

Applicant has amended claims 18 and 19 to correct the typographical  
5 errors noted by the Examiner. Applicant thanks the Examiner for bringing these errors to his attention.

Since the Examiner's suggestions have been implemented by the claim amendments, the Applicant respectfully requests that the claim objections be withdrawn from the Application.

10 35 U.S.C. §112, SECOND PARAGRAPH INDEFINITENESS OF CLAIMS 6-8 & 14

*2. The claim amendments and addition of new claims have clarified the ambiguities and indefiniteness noted by the Examiner.*

In the OA, on pp. 2-3, the Examiner noted that claim 1 states a set of filters for a pure mode transmission system with a pure FDD or pure TDD mode,  
15 and that if claim 1 is read to implement the pure TDD mode, then it is not clear which mode claim 6 refers to. The Examiner further stated that claim 7 was rejected for the same reason as claim 6. As to claim 8, the Examiner indicated that it is not clear as to which band pair claim 8 is referring to, and as to claim 14, the Examiner stated that if claim 1 is read to select the RF switches, then it is not  
20 clear what "said duplexers" claim 14 is referring to.

*Applicant has amended claim 1 to cancel the expression "or pure TDD" is canceled. Thus, amended claim 1 concerns a front-end circuit with a mixed-*

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mode transmission system and a pure-mode transmission system operating in an FDD mode.

Claims 6 and 7 should be clear now since the amended claim 1 relates to a mixed FDD/TDD system and a pure FDD system. Thus, the claims relate to an FDD mode of a mixed-mode system or to an FDD-mode of the pure-mode FDD system. It is no longer ambiguous to determine which mode claims 6 and 7 refer to.

A new claim 27 has been added that relates to a multi-mode system comprising two different pure-mode systems and claim 8 has been amended to now depend from claim 27 to eliminate the ambiguity noted by the Examiner. Finally, claim 14 has been amended to eliminate the ambiguity noted by the Examiner.

Applicant has further added new independent claims 24 to 26 in which the features of the original claim 1 are used, but the wording has been improved. Furthermore, additional technical features have been added, respectively, as explained below.

In new claim 24, the feature "frequency bands of mixed mode and pure mode systems are overlapping or adjacent to each other" is supported by the original description in paragraphs [0017-0018].

The new independent claim 25 relates to an embodiment comprising a multiple RF switch for separating band pairs of different transmission systems, wherein the multiple switch additionally enables switching for a TDD mode of the respective system, for instance a pure-mode TDD system or a mixed-mode

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system. The new claim 25 is supported by features as disclosed in the original claims 3 and 4.

The new independent claim 26 is relating to an embodiment comprising a diplexer in order to separate band pairs of different transmission systems. The  
5 diplexer comprises a high pass and a low pass. This feature is supported by Figures 4 and 11 and their respective descriptions.

35 U.S.C. §102(e), CLAIMS 1-3, 5-7, 9-11, 15-17, 20 & 21 ANTICIPATION BY HAGSTROM

3. *Hagstrom fails to teach, according to claim 1 as amended, a second*  
10 *transmission configured to operate in a pure FDD mode.*

The Examiner, on p. 4 of the OA, indicates that Hagstrom discloses a common antenna 21, mixed mode (GSM) filters 13a and 18A, pure mode (DECT system which may be implemented in TDD or FDD mode) filters 13b and 18b, where the filters are coupled to the common antenna via the switches.

15 Hagstrom discloses a front-end circuit comprising a common antenna 21 and components for a transmission system (GSM) operating in a mixed mode as well as for a further transmission system (DECT) operating in a pure TDD mode. Separation of signals of the two transmission systems is realized by way of a triplexer 51, comprising three band-pass filters.

20 The invention according to amended claim 1 differs from the disclosure of Hagstrom in that, according to the invention, a second transmission system operates in a pure FDD mode. Note that a DECT system used as a second transmission system in Hagstrom is a cordless phone standard, which is different

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from mobile communication standards. Therefore, for one skilled in the art, it is not obvious to replace a DECT system operating in a TDD mode by another system operating in an FDD mode.

Furthermore, in contrast to new independent claim 24, Hagstrom fails to  
5 teach or suggest that frequency bands of mixed mode and pure mode systems are overlapping or adjacent to each other. In contrast to that, the frequency bands of the two systems used in Hagstrom are separated by at least one octave. And, in contrast to new independent claim 25, Hagstrom fails to teach or suggest that a multiple RF switch is used in order to separate band pairs of a  
10 pure-mode transmission system and a mixed-mode transmission system. It is not obvious to replace the known triplexer by a multiple RF switch.

The invention according to the new independent claim 26 differs from Hagstrom in that the diplexer according to the invention comprises a high-pass and a low-pass. In contrast, Hagstrom describes, for the front-end circuit, that  
15 the use of three band-passes is indispensable for separating the band pairs of a DECT system and a GSM system. For this reason, it is not obvious to replace Hagstrom's triplexer by a diplexer, i.e., by a combination of a high-pass and a low-pass. A bandpass filter does not comprise, by definition, the functionality of a high-pass and a low-pass filter as stated by the Examiner. A high-pass filter  
20 attenuates frequencies below a given frequency and lets pass frequencies lying above this given frequency. In a high-pass filter, lower frequencies are attenuated, higher frequencies can pass. In a bandpass filter, only frequencies lying between a lower and an upper boundary frequency can pass. Frequencies

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below the lower boundary frequency and above the upper boundary frequency are attenuated.

For these reasons, Applicant asserts that the independent claims of the present invention, as amended, are neither taught nor suggested by Hagstrom, and Applicant respectfully requests that the 35 U.S.C. §102 rejection be withdrawn from the application.

**35 U.S.C. §103(a), OBVIOUSNESS OF CLAIMS 22 & 23 OVER HAGSTROM**

4. *Hagstrom fails to teach, according to claim 22, an FDD pure mode transmission system with a pure FDD mode.*

10 The Examiner, on p. 6 of the OA, indicates that Hagstrom discloses a system implemented with two known DECT systems (one Pure FDD and one pure TDD) that would comprise the associated Pure mode filters for each band pair, and that it would have been obvious to one of ordinary skill in the art to implement any combination of known band-pair systems for the advantage of  
15 providing maximum compatibility with the system in which the phone is to be used.

As noted under paragraph 3 above, Hagstrom discloses a front-end circuit comprising a common antenna 21 and components for a transmission system (GSM) operating in a mixed mode as well as for a further transmission system  
20 (DECT) operating in a pure TDD mode. Separation of signals of the two transmission systems is realized by way of a triplexer 51, comprising three band-pass filters.

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Hagstrom fails to teach an FDD pure mode filter for a pure mode transmission system with a pure FDD mode. Hagstrom's DECT system is a cordless phone standard, which is different from mobile communication standards, and thus, for one skilled in the art, it is not obvious to replace a DECT  
5 system operating in a TDD mode by another system operating in an FDD mode.

**35 U.S.C. §103(a), OBVIOUSNESS OF CLAIM 4 OVER HAGSTROM IN VIEW OF MINARIK**

*5. Claim 4 is ultimately dependent from claim 1, and Applicant relies on the arguments with respect to claim 1 for the nonobviousness of claim 4—  
Applicant asserts that the addition of the Minarik reference does not further teach  
10 a second transmission system configured to operate in a pure FDD mode.*

In the OA, on p. 7, the Examiner adds Minarik to the Hagstrom reference in order to obviate a teaching of the element added by claim 4. Without addressing the merits of Minarik addressing the limitations of claim 4, Applicant relies on the arguments under paragraph 3 in asserting that the combination fails  
15 to teach or suggest a second transmission system configured to operate in a pure FDD mode.

**35 U.S.C. §103(a), OBVIOUSNESS OF CLAIMS 12-14 OVER HAGSTROM IN VIEW OF BURGESS**

*6. Claims 12-14 are ultimately dependent from claim 1, and Applicant  
20 relies on the arguments with respect to claim 1 for the nonobviousness of claims 12-14—Applicant asserts that the addition of the Burgess reference does not further teach a second transmission system configured to operate in a pure FDD mode.*

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In the OA, on p. 7, the Examiner adds Burgess to the Hagstrom reference in order to obviate a teaching of the elements added by claims 12-14. Without addressing the merits of Burgess addressing the limitations of claims 12-14, Applicant relies on the arguments under paragraph 3 in asserting that the  
5 combination fails to teach or suggest a second transmission system configured to operate in a pure FDD mode.

**35 U.S.C. §103(a), OBVIOUSNESS OF CLAIM 18 OVER HAGSTROM IN VIEW OF WALDROUP**

7. *Claim 18 is ultimately dependent from claim 1, and Applicant relies on  
10 the arguments with respect to claim 1 for the nonobviousness of claim 18—*  
*Applicant asserts that the addition of the Waldroup reference does not further teach a second transmission system configured to operate in a pure FDD mode.*

In the OA, on p. 8, the Examiner adds Waldroup to the Hagstrom reference in order to obviate a teaching of the elements added by claim 18.  
15 Without addressing the merits of Waldroup addressing the limitations of claim 18, Applicant relies on the arguments under paragraph 3 in asserting that the combination fails to teach or suggest a second transmission system configured to operate in a pure FDD mode.

20 **35 U.S.C. §103(a), OBVIOUSNESS OF CLAIM 19 OVER HAGSTROM IN VIEW OF KURCHUK**

8. *Claim 19 is ultimately dependent from claim 1, and Applicant relies on  
the arguments with respect to claim 1 for the nonobviousness of claim 19—*  
*Applicant asserts that the addition of the Kurchuk reference does not further teach a second transmission system configured to operate in a pure FDD mode.*



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In the OA, on p. 8, the Examiner adds Kurchuk to the Hagstrom reference in order to obviate a teaching of the elements added by claim 19. Without addressing the merits of Waldroup addressing the limitations of claim 19, Applicant relies on the arguments under paragraph 3 in asserting that the combination fails to teach or suggest a second transmission system configured to operate in a pure FDD mode.

For these reasons, the Applicant asserts that the amended claim language clearly distinguishes over the prior art, and respectfully request that the Examiner withdraw the §103(a) rejection from the present application.

10 CONCLUSION

Inasmuch as each of the objections have been overcome by the amendments, and all of the Examiner's suggestions and requirements have been satisfied, it is respectfully requested that the present application be reconsidered, the rejections be withdrawn and that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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**CERTIFICATE OF FACSIMILE**

I hereby certify that this correspondence is being telefaxed to the U.S. Patent and Trademark Office telephone number (703) 872-9306 and addressed to: Mail Stop Amendment Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on May 9, 2005.

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